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THE ALBANIAN CHROMITE MINES

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INTRODUCTION

The report shows that the Albanian chromite mines are distributed through five regions:

- A. The Pogradec zone in Southern Albania, West of Lake Ohrid
- B. The Klos zone in Central Albania
- C. The Kukes zone in Northern Albania
- D. The Letaj zone on the northern frontier of Albania

E. The Kosove zone to the north of the Letaj zone, with the two mining regions of Deva and Baba J Boks.

The chromite ore production of Albania in 1942 was 38,000 tons, with an average content of 42 percent Cr_2O_3 . Estimated production for 1943 is 66,000 tons.

All data and figures for 1943 must therefore be considered as estimates only, and the difference between these and the actual figures would have to be determined.

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The Albanian mining regions are in the mountains. Ore must be brought to loading stations in the valley by animal transport or by cable railways. Most of the operations are on the surface, but there is some underground mining.

Formerly, ore was carried from the loading stations by animal-drawn vehicles, but now, since completion of the necessary roads, trucks can be used. In the northern region it is planned to build a narrow-gauge railroad from Deva and Jakova to Peje. (The Italian report does not indicate whether it has been completed.)

The report shows that the following problems must be solved:

1. Extension of underground mining: Winter weather makes it necessary to stop surface mining almost completely during January and February, and production during November, December, and March is only about one tenth of that achieved during the summer months. The construction of shafts would permit working throughout the year, and would also allow the exploitation of ore veins at greater depths.
2. Electrification and motorization of the operations.
3. Transport: Building of cable railways to transport the ore from the mining sites to the loading stations in the valley. Building of light railways, construction of roads, and motorization of vehicles. Up to 1942, 71 kilometers of road had been built. The new narrow-gauge railway connecting the loading station at the Deva mine with Jakova and the Yugoslav railroad station at Peje is to be finished by September 1943.
4. Workers: In 1942, about 3,000 workers were employed, 1,600 of them for road construction.

The following table summarizes 1943 production and investment plans for the five regions.

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1943 Plan					
Mining Region	Transport Facilities	Production (tons) (in parentheses: including stocks left from Dec. 42)	Production Costs (million Italian lire) (in parenthe- ses: lire per ton)	Investments (mil- lion Italian lire) (in parentheses: lire per ton)	Total Expendi- tures (million Italian lire)
Pogradec (Southern Albania)	Sea: 150 km of road to Durres (port) Land: 40 km of road to narrow-gauge (?) RR station Struga	approx 10,000 (" 12,000)	approx 7.5 (730)	2 1/3 (235)	approx 10
Klos (Central Albania)	Sea: 125 km of road to Shengjin (port) Land: 1942: no prac- ticable route 1943: 400 km of road to Lipljan (?)	approx 14,000 (" 16,000)	approx 7 (520)	4.5 (330)	approx 11.5
Kukes (Northern Albania)	Land route only: 110 km of road to Lipljan	approx 15,000 (" 32,000)	approx 6.5 (420)	7 (500)	approx 13.5
Letaj (Northern Albania)	Land route only: 50-60 km of road to Peje	approx 14,000 (" 15,000)	approx 9.5 (700)	5 (350)	approx 14.5
Kovove	Land route only: Since 1942, road to Peje	approx 12,000 (" 12,000)	approx 4.5 (340)	2 (150)	approx 6.5
Total production in 1942: 38,000 tons		approx 65,000 (" 87,000)	approx 35	approx 21*	approx 56

*Road construction 6; cable railways 5; light railways 3; mine mechanization 5; industrial buildings 2.
 [This ends the German analyst's introduction.]

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I. PRODUCTION PROGRAM AND ESTIMATES, 1943

The Albanian chromite deposits are part of the great Turko-Balkan chrome ore deposits, that is, part of the northeast corner of the southern ophiolitic region, which, so Wijkerslooth claims, includes the Greek ore deposits (Olympus, Volos, Euboea, etc.), deposits in southern Turkey (Marmaris, Fethiye, Tauris, Guleman, etc.), and deposits on Rhodes and Cyprus.

Chromite is an inframagmatic mineral and appears in the different types of magma deposits, e.g., in dunites, harzburgites, wehrlites, saxonites, and laerzolites, in all stages of hardening of the ultrabasic magma, both in its edge zones and in those portions of the magma which crystallized at a later time within the earthquake zones.

In general, it is found in the peridotite masses, although it nearly always contains inclusions or is surrounded by separation material. The peridotite does not appear in its basic form, but has been turned into serpentine by self-liquefaction.

Chromite appears in different forms, depending on the form and location of the individual deposits. In the upper and external zones of the torn ophiolitic masses, mineral penetrations are generally found, in the form of isolated chrome grains, finely distributed, or in very thin layers or threads. The lower portions of the magma, and the false veins which appear in the earthquake zones mentioned above, frequently show pisolithic material measuring from a few millimeters to a few centimeters in diameter, and called leopardite, ring ore, or kokarden ore, depending on the type of absorption by the still liquid magmatic mass.

The basic part of the mineral is frequently composed of compact minerals which consist of a uniform crystalline mass and a strong penetration of the pisoliths, generally interrupted by olivinic infiltrations. Parts of this mass which have become solid by serpentinization were often torn out by earthquake. This affords an explanation of the fact that compact masses of mineral originating in other zones are found mainly in fault zones. The Letaj mining region is an example. The mineral usually appears in the form of parallel veins which run in the direction of the general ore structure.

The geological map of Albania shows a certain number of great faults which run in an arc from south-southeast to north and whose eastern part is particularly interesting. These faults separate the region into five main zones which contain great masses of peridotites. Until now, chrome ore in large quantities has been found only in the fifth, or easternmost, zone. The first prospecting activities were carried out in this zone by the Italian Anmi Corporation in 1938-39. This is the region around Pogradec on Lake Ohrid, and farther north, near Kukes, where the White Drin and the Black Drin join. All other prospecting operations -- northwest of Lake Ohrid, near Klos in central Albania and at Letaj (northeast Albania), and that carried out recently near Kosove, northwest of Jakova -- are in this fifth zone. So far we have not received any positive information on strikes made in the other four zones, which also contain peridotite.

The rocks found in the various mines of Albania contain all the kinds of ores mentioned above: the compact and very rich ores, pisolithic minerals with medium to high ore content, and minerals with varying ore content. The ore deposits are in the usual vein formation, with more or less rich ore veins and with concentration of the most varied forms in connection with the ophiolites. Schlieren plates have been found only in the Kukes region. They resemble

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those frequently found in Yugoslavia. On the whole, the rocks, if properly selected, have a good ore content which makes commercial exploitation worthwhile and which suffices for present-day purposes.

The material which is poor in ore content, on the other hand, is not sufficiently concentrated to justify the building of mine installations.

An outline of the zones is as follows:

A. Pogradec Zone, west of Lake Ohride, extending to the northwest

1. Memelisht: rich minerals and compact ore deposits
2. Gjerduk: sporadic occurrence of ore with medium content
3. Kathjel: isolated and compact ore deposits
4. Pishkash: compact ore deposits, pisolithic ore deposits, and isolated deposits
5. Skroske: compact ore deposits, pisoliths, and isolated deposits
6. Librazhd: to be explored

B. Klos Zone, central Albania

1. Fortuna: minerals with brittle structure
2. Italia: compact ore with penetration zones
3. Littorio: compact ore, partially with penetrations
4. San Luigi: penetrations, at some points compact ore also

C. Kukes Zone, Northeast Albania

1. Kalimash: mostly pisolithic penetrations, some compact ore or schlieren plates
2. Dukagjin: mainly penetrations
3. Surroj: mainly penetrations
4. Qaf' e Kumbulles: low ore content

D. Letaj Zone, northeast Albania

1. Letaj: mostly rich and compact mineral; only a few isolated zones; occasional occurrence of pisolite
2. Perollaj: rich mineral, usually in nodular form
3. Zogaj: mostly compact ore
4. Lejthize: mostly compact ore
5. Kepenek: rich ore and compact ore, occasionally mixed with penetrations
6. Kam: mostly rocks rich in ore, also compact ore
7. Helshan: mostly compact ore
8. Lenic: compact mineral, low ore content
9. Bityci: generally rich, compact rock. In some mines it is deposited in nodular form within the dunite. Deposits have been detected as far as Tropoje, but could not be developed so far because of lack of transport facilities.

E. Kosove Zone

This zone contains the Deva and Babaj Boks mines and several diggings in the vicinity of Popovac and Orahovac.

1. Deva: small mine with a single, lenticular deposit of good, compact ore
2. Babaj Boks: small amount of ore of inferior grade, very difficult to sort
3. Popovac: new prospecting activities, mixed ore
4. Orahovac: lenticular deposits and residues of mostly impregnated mineral with a few schlieren plates. The mineral resembles that found in the Vardar valley.

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A total of 160 mines are in operation. In 1942 production was 37,867 tons of commercial ore with an average content of 42 percent Cr_2O_3 .

Transport created great difficulties. A great number of mountain trails had to be built to make the mines, located in the mountains and without transport facilities, accessible. This was followed by the construction of roads and highways connecting with the Albanian road network. The following roads, totaling 71.3 kilometers, were built:

	<u>Kilometers</u>
Road connection to Memelisht	0.7
Road to Gjerduk	9.0
Road to Kathjel	7.4
Road to Bushtrice	<u>4.0</u>
Total for Progradec	21.1
Road to Kalimash	7.0
Road from Dukagjin to Surroj	13.3
Road to Dukagjin	<u>5.0</u>
Total for Kukes	25.3
Road from Jakova to Qaf' e Prushit	12.5
Road Qaf' e Prushit to Kepenek	<u>12.5</u>
Total for Letaj	25.0

The transport of ore from the individual mines to loading ramps located on roads passable by trucks was carried out almost entirely by animals in 1942. Cable railways to Mine 4 at Memelisht and to Mines 10, 11, and 12 at Kalimash were also in operation. This uneconomical and inefficient means of transport has led to the decision to motorize transport facilities, to electrify some phases of production, to install mechanical equipment, and to build narrow-gauge railway lines of considerable length. It is planned to build a line 50 kilometers long from the valley terminal of the cable railway at Deva to Gjakova and to Peje. The harbor of San Giovanni di Medua will be equipped with ore-loading machinery.

II. MINING PLANS FOR 1943

A. Pogradec Zone

In 1942 work in the shaft was accelerated, and considerable chromite deposits were found which will guarantee regular production for some time to come. The Cr_2O_3 content increases with the depth of the mine. Excluding the Shkroske zone, for which no definite data is available as yet, the following estimate of reserves was made at the end of 1942 for the zones comprising the Pogradec zone: certain reserves, 24,000 tons of standard ore; probable reserves, 12,000 tons; and possible reserves, 12,000 tons; or an estimated total of 48,000 tons.

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Most of these ores are in the Memelisht, Kathjel, and Pishkash mines. The Gjerduk mine will probably be exhausted by 1943. Prospecting at Skroske, at an elevation of 1,800 meters, was carried out only on a small scale, but the tests showed exceptionally good results.

Fifteen hundred meters of road were built, to connect the valley terminal of the Kathjel cable railway with the already existing road. The cable railway at Pishkash was extended from an elevation of 1,050 meters to the end of the truck road. Four kilometers of road in the Bushtrice valley were completed. This road is to be used for transporting the ore mined at Skroske.

Ore production in the Pogradec region during 1942 was as follows: first-grade ore, 6,538 tons; second-grade ore, 1,472 tons; total, 8,010 tons.

The 1943 production is estimated as follows: Memelisht, 2,430 tons; Gjerduk, 600; Kathjel, 2,500; Pishkash, 1,900; and Skroske, 2,570, a total of 10,000 tons.

The following construction work is to be carried out during 1943: installation of two pumps, installation of three ventilators, construction of an explosives depot at Memelisht, construction of 1,000 meters of cable railway at Kathjel, extension of Kathjel road, extension of Pishkash cable railway, construction of 1,500 meters of light railway line, construction of three cable railways at Pishkash, construction of compressed-air installations, construction of 3,000 meters of mountain trail for the Skroske mines, installation of one motor compressor, construction of three cable railways, and extension of the Bushtrice road.

B. Klos Zone

Klos is located in central Albania, 109 kilometers from the port of Shengjin and is connected with the latter by a good truck road. The first prospecting for chromite in this zone was carried out in April 1942, at bench mark 809, in the immediate vicinity of the road at a point about 13.6 kilometers from Klos in the direction of Diber. The first digging operations did not strike any well-defined deposits, but revealed a number of chromite blocks intermixed with serpentines which apparently had rolled down into the valley from the surrounding mountains (Doghzt Mountain).

The work carried out later and on a larger scale, in a mountainous area with dense vegetation, led to the discovery of important chromite deposits. These strikes were made in the vicinity of the above road, at bench mark 1200 (Littorio mine), at bench mark 1150 (Italia mine), at bench mark 1320 to the south of the road (Murrize mine), and at bench marks 950, 1560, and 1300 (San-Luigi mine). Even approximate data on the size of the deposit would be premature, but it has definitely been established that these are the largest chromite deposits in Albania. Initial operations produced 3,309 tons of commercial chromite up to November, when the onset of winter prevented continuation of the work.

Preparatory work was carried out during the short period in which the weather permitted operations. The mine at bench mark 809 (Fortuna mine) was connected with the national highway, and preparations for a number of diggings were made. Other mines were made accessible for animal transport by the building of mountain trails. The mining is a surface operation, with the diggings arranged in steps.

The Littorio mine consists of several steps up to 60 meters in width, dug into a compact chromite deposit. Surface mining is being developed further, and the construction of a shaft is planned for 1943, to increase the capacity of the mine and to permit working during the winter months. It is also planned to open new surface diggings in this region.

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The most important section of the Italia mine, consisting of surface diggings arranged in steps, was opened in 1942. Three other deposits have been discovered, running north-south between bench marks 1100 and 1150. It is planned to start six new surface diggings and a number of shafts.

The Monte Murrize mine consists of six ore deposits with good, compact material. Surface diggings are to be started, and shafts are to be dug in 1943.

At the San Luigi mine four ore deposits were prospected in 1942. It is planned to start exploiting them in 1943.

Exploitation of this important zone requires the acquisition of pneumatic, electrical, and mechanical equipment, and the construction of necessary housing, office, and storage facilities, because there are absolutely no facilities of any kind in the region. There is no local labor available, and workers will have to be brought in. It is planned to build a motor-driven cable railway to connect the mines with the loading stations. An electric power plant with motor-driven generators is to be built in the vicinity of the loading station at the Italia mine.

Data in the following three tables is taken from tables in the original on which no titles or headings are given. The first appears to be a production record for 1942. Totals in the second and third tables agree with the figures given for 1943 planned production in the German analyst's summary. The periods Mar - Dec and Mar - Nov indicated below were deduced from other data in the original.

[1942 Production?]	Tons
Fortuna mine	619.5
Italia mine	2,360
Littorio mine	115
San Luigi mine	67.5
Total	3,162

[Planned Production for 1943
(Mar - Dec)?]

Fortuna mine	1,400
Littorio mine	1,600
Italia mine	7,000
Murrize mine	3,000
San Luigi mine	1,000
Total	14,000

[Planned Production for 1943 (Mar - Nov), including stocks left from Dec 1942?]

	Tons
Fortuna and Littorio mines	3,750
Italia mine	8,650
Murrize and San Luigi mines	3,600
	16,000

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The following construction projects are planned for 1943:

Fortuna mine: installation of motor compressors, 6 kilometers of road, and 800 meters of light railway.

Littorio mine: installation of motor compressor(s), construction of road, 500 meters of light railway, and a cable railway to the storage dump.

Italia mine: installation of two motor compressors, workshops, 3 kilometers of road, and a cable railway to the storage dump.

Murrize mine: installation of motor compressor, 5 kilometers of road, cable railway, and storage dump.

San Luigi mine: installation of motor compressor, 4 kilometers of road, 3,000 meters of cable railway, storage dump, construction of a wooden bridge, and a loading ramp.

Klos: administration buildings, storage depot, metal and carpenter shops, and a garage.

In addition, electrical equipment is to be installed and a power plant built.

C. Kukes Zone

These mines were developed intensively during 1942. Results were very good, because it turned out -- contrary to expectations -- that the veins become richer with increasing depth. In the course of the year all mines heretofore considered exhausted were reopened. Only the Qaf' e Kumbulles mines, located in an area with no communications whatsoever and with other deterring aspects, were not reopened. It also turned out that the lower zone of Surroj has been exhausted. In all other regions, especially in the Kalimash zone, further working of existing mines and prospecting activities have struck new deposits which are of interest. The Kalimash mines are expected to compensate for the loss of production caused by exhaustion of other mines.

Nine hundred meters of underground workings were excavated in 1942. The road network was extended and developed. The Kalimash region is now connected by a good motor road with the national highways of Albania. Three of the 5.88 kilometers of road between Kolsh and Dukagjin were improved near Surroj, and 7.5 kilometers of the Dukagjin-Surroj road were improved. Cable railways were built for Mines 11, 12, and 14 in the Kalimash region.

The 1942 production was as follows (in tons):

	<u>Grade I</u>	<u>Grade II</u>
Dukagjin	108	--
Surroj	844	204
Kalimash	8,883	346
Qaf' e Kumbulles	--	--
Total	9,835	550

[Note: Grade I must exceed 41 percent Cr₂O₃; Grade II must exceed 35 percent.]

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Production planned for 1943 is 12,500 tons of Grade I and 2,500 tons of Grade II, or a total of 15,000 tons.

The following installations are planned for 1943:

Kalimash: thermoelectric power plant; 3.5 kilometers of high-tension lines to Mines 11, 12, 1, and 1a; 4 kilometers of high-tension lines to Mines 15, 6, and 9; transformer stations for Mines 11, 12, 1, 1a, 15, 6, and 9; two motor compressors for Mines 11, 12, 1, and 1a; 1,000-kilogram-capacity winch for Mine 1a, pneumatic winch for Mine 11; two pumps with 20-meter pipelines for Mines 11 and 1a; 1,000 meters of light railway; 2,000 meters of cable railway, capacity 6 tons per hour, for Mine 1a; two 1,000-meter cable railways, capacity 2 tons per hour, for Mines 15, 6, 7, 8, and 9; two 200-meter auxiliary cable railways, and a storage dump.

Surroj: completion of the Kolsh-Dukagjin road; construction of Dukagjin-Surroj road; motor compressor for Mine 22; 1,000 meters of light railway; 1,500 meters of cable railway, capacity 2 tons per hour, for Mine 21; and 600 meters of cable railway for Mine 22.

D. Letaj Zone

This region, in 1942, produced 14,352 tons of commercial Grade I chromite ore. New surface workings were opened, and construction of underground workings was started in those sections where the surface deposits had become more or less exhausted. The Jakova - Qaf' e Prushit road (12.5 kilometers) was finished and a 12.5-kilometer section along the Qaf' e Prushit-Kepenek road was completed. A cable railway was built for ore transport from Zogaj Mine No 5. Since no housing facilities whatsoever were available, these had to be constructed.

At the end of 1942, the situation at the various mines was as follows:

1. Letaj Mines

Mines 1, 2, 4, and 5 were not operating, because of a labor shortage.

Mine 2a: Surface mining was started in June in the sections containing rich ore deposits. Building of underground workings was started.

Mine 3: Tunnel dug along an ore vein. Heavy seepage and lack of proper pumping equipment necessitated curtailing of operations. Work could be carried out only during the summer months.

Mine 3a: Surface mining of ring ore. Underground workings are to be constructed in 1943.

Mine 4a: Rich ore, but apparently the rich vein can be struck only at a fairly great depth.

Mine 6: Surface mining until September, underground mining afterwards. The construction of a tunnel struck a layer 4 meters thick which contained rich material, followed by a 4-meter layer of mixed material. A gallery 4 meters long struck good ore.

Mine 7a: Surface mining, ore not very rich. Construction of a shaft resulted in the mining of ore with a higher content, 2 to 4 meters below the surface.

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The Letaj mines yielded 752.5 tons of Grade I ore, with an ore content of 47 percent, in 1942.

2. Perollaj Mines

Only three of the five mines are operating.

Mine 1: Surface mining, good ore. Veins continue toward greater depth.

Mine 2: Surface mining, ore content 44 percent (ore nodes within the serpentine). Vein at present established as having a depth of 4 meters and a length of 14 meters.

Mine 4: Surface mining. Vein 3 x 6 meters, ore content 45 percent.

The Perollaj mines yielded 264.6 tons, with an ore content varying between 45 and 48 percent, during 1942.

3. Zogaj Mines

Mines 1, 2, 3, 7, 9, 9a, 10, and 10a are not operating because of a labor shortage.

Mine 4: Surface mining, in two steps of 40 x 6 meters. Very good ore. Construction of tunnel is under way. A vein with a 47-degree inclination is being investigated. This is the most important of the Zogaj mines.

Mine 5: Operations are being carried out at five different sites, but only the first seems to be of importance.

Mine 6: Two production sites, 10 meters apart, are being started.

Mine 8: Surface mining of a vein 2 meters thick. A shaft was sunk which showed the presence of ore down to a depth of 8 meters, the ore content increasing with depth.

In 1942 the Zogaj mines yielded 6,650 tons of ore with a content of 47 percent.

4. Lejthize Mines

Twelve of the 13 mines of this zone are in operation.

Mine 1: Surface mining, very good ore.

Mine 2: Surface mining, very good ore, but interrupted by fault zones.

Mine 3: Surface mining until August. Operations during the winter are restricted to a 12-meter-long tunnel. Four meters of this tunnel run through ore, the other 8 meters through pyroxenitic-periodic rock.

Mine 4: Surface mining, very good ore. Underground working to be constructed in 1943.

Mine 5: Surface mining. Deposits are sporadic, but very rich.

Mine 6: Tunnel construction is under way. The vein struck in this tunnel seems to be a continuation at a greater depth of the deposit struck at Mine 9.

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Mine 7: Surface mining, very good and rich ore.

Mine 8: Surface mining. Deposits are sporadic, but very good.

Mine 9: Surface mining, very rich ore.

Mine 10: Surface mining, very good ore. Large ore deposits could probably be struck at greater depth.

Mines 10a and 10b: Same as Mine 10.

These mines yielded 2,849 tons of good ore during 1942.

5. Kepensk Mines

Mines 2, 3, and 6 are not in operation, because of a labor shortage.

Mine 1: Surface mining of a very rich vein.

Mine 4: Surface mining. The vein does not contain very much ore, but the ore is of high quality.

Mine 5: Surface mining of a vein of medium quality, yielding a mixture of Grades I and II ores.

Mine 7: Surface mining of an ore deposit of mixed Grades I and II ore.

In 1942 these mines of the Letaj zone yielded 480 tons of commercial ore with an ore content of 45 percent.

6. Kam Mines

Mines 5, 6, 7, 8, and 9 are not operating.

Mine 1: Surface and underground mining in an extensive ore vein, containing 45 - 46 percent ore. The surface workings are in two steps, covering an area of 8 x 6.5 meters. The underground workings consist of a tunnel 67.5 meters long: the first 45.5 meters run through ore, next 2.5 meters through serpentine, 5.7 meters through ore, 4.2 meters with ore only on the roof and the sides, and the last 10 meters through ore. At the 33-meter point there is an ore deposit 4 meters to the west and another 3 meters to the east.

Mine 2: Surface and underground mining. A clear idea of the position of the deposits has not yet been obtained.

Mine 3: Surface mining in two steps, of 5.5 x 6 meters each. Very good ore.

Mine 4: Surface mining in two steps, 7 x 8 meters. Very good ore. In this mine, and in Mine 10 below, underground workings are to be started in 1943 along the vein, which continues toward greater depth.

Mine 10: Very rich ore vein, 50-percent chromite content.

In the Kam region 3,537 tons of commercial ore, with an ore content of at least 45 percent, were mined in 1942.

7. Helshan Mines

Only one of the four surface workings was operated as late as August. It contains good, rich ore. So far, the mine has yielded 20 tons of rich ore.

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8. Lenic Mines

Only one of the four mines was in operation as late as August. The ore is rich, but the capacity of the mine is low. So far only surface operations have been carried out.

9. Bityc Mines

Seven of the eight mines were operating.

Mine 1: Surface mining; compact, rich ore.

Mine 2: Surface mining; compact, rich ore.

Mine 3: Surface mining; good, rich ore.

Mine 4: Surface mining; good ore, but content not very high.

Mine 5: Surface mining; good ore

Mine 6: Surface mining; compact nodes of mineral enclosed by dunite. The vein is 100 meters long, 30 meters wide, and apparently very deep.

Mine 8: Surface mining; rich ore. It has been established that the deposit is at least 50 meters long and 10 meters wide; it probably continues both in length and in depth.

These mines yielded 580 tons of Grade I ore, with an ore content of more than 47 percent, during 1942.

Total production of the Letaj mines in 1942 was as follows (in tons):

Letaj	752.5	
Perollaj	264.6	
Zogaj	5,870	[Note: This figure does not agree with the one given previously]
Lejthize		
(Cap. Z.T.) [sic]	504.7	
Lejthize to		
Kepenek [?]	2,344.3	
Kepenek	480	
Kam	3,537	
Bityc	580	
Helshan	20	
Tropolje	--	
Total	14,353.1	

In 1943, production should reach 13,500 tons of commercial Grade I ore, as follows: Letaj, 500 tons; Perollaj, 500; Zogaj, 3,600; Lejthize, 2,150; Kepenek, 500; Kam, 2,550, and Bityc, 3,700 tons.

Intensification of prospecting and preparatory operations is planned at Mines 3 and 6 at Letaj, 4 and 6 at Zogaj, 3 and 6 at Lejthize, and 1 and 2 at Kam. Preparatory work for the construction of underground workings is to be accelerated. It is planned to build tunnels in Mines 2 and 3 at Letaj, Mines 4 and 9 at Lejthize, and Mines 3 and 4 at Kam, to explore the condition of the ground.

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Prospecting on new sites is to be carried out. It is planned to open ten new mines in zones where the presence of ore was established in 1942.

A number of construction projects are planned for 1943 on the Jakova-Qaf' e Prushit-Kepenek road. The Kam deposits are to be connected with Kepenek not by a trail, as at present, but by a 3-meter-wide road which will also have a light railway. Another light railway is to be built on an embankment one meter wide running from Mine 6 at Lejthize to the truck road which is already in existence. Most of the mining sites will use cable railways for transporting ore. However, until the mechanization project has been completed, ore transport from Letaj and Perollaj to Qaf' e Prushit will have to be by oxcart, while horse-drawn vehicles will be used to bring the ore from Mine 1 to the "Capanna di Zio Tom" loading site, from Lejthize Mines 3 and 4 to the loading site at Kepenek, from Lower Lejthize to Kepenek, from Kepenek and Herlasni to the third loading site at Kepenek, and from Bityc to the loading site at Kam.

The following installations are planned for 1943: two motor compressors with two pneumatic hammers each; 500 meters of light railway; three 3,000-meter cable railways; six hoists; a small lighting installation with generator plant; completion of road to Qaf' e Prushit; 6 kilometers of road, 3 meters wide, also with a 60-centimeter-gauge railway, from Kam to Kepenek; and 2.5 kilometers of 60-centimeter-gauge railway, from Lejthize to Kepenek.

Present operations, consisting of surface mining and a very little underground mining, do not permit definite data on the extent of the region's ore deposits, especially since large areas have not yet been explored. On the basis of data collected so far and the results obtained, the following estimate has been prepared for the ore deposits which extend from Letaj to Bityc: known deposits, 50,000 tons of commercial chromite; probably deposits, 50,000 tons; and possible deposits, 100,000 tons.

E. Kosove Zone

The Kosove region contains two mines, Deva and Babaj Boks, and also several ore zones in the region of Orahovac and Popovac, which are still being investigated.

1. Deva Mine

Located in the Kosove region, at the border of Old Albania, northwest of Qaf' e Prushit. It consists of a single ore vein, which descends from an elevation of 829 meters to an elevation of 776 meters. However, the chromite deposits extend to great depths, so it can be assumed that there are additional deposits present. This assumption is strengthened by the fact that the ore vein increases in size down to an elevation of 788 meters. The few prospecting operations which have been carried out so far do not permit any conclusions on the size of the deposits. On the basis of the very conservative estimate of a vein thickness of 2 meters, the ore reserves would be:

<u>Elevation (meters)</u>	<u>Length (meters)</u>	<u>Area (square meters)</u>
829	20	25 x 14 = 350
815	30	50 x 7 = 350
808	70	77 x 8 = 616
800	85	98 x 12 = 1,176
788	110	100 x 12 = 1,200
776	90	
		Total 3,692

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Assuming a minimum vein thickness of 2 meters, this would mean an ore mass of 7,384 cubic meters, which, at a specific gravity of 3, would mean 22,152 tons of commercial ore. Considering the possibility of additional deposits, and mining at greater depths, the Deva ore deposit can be estimated to contain 40,000 to 50,000 tons of commercial ore.

It is planned to extend the underground workings during 1943, and to continue the surface mining. The required pneumatic equipment will have to be installed. To avoid having to transport the ore from the mine to Giakova in oxcarts, a cable railway is to be built to the Deva-Ami station, the terminal of the new narrow-gauge railway through Giakova to Peje.

2. Babaj Boks Mine

The Babaj Boks deposits can be considered to be exhausted. Unless new ore veins are discovered, the last ore deposits will soon have been mined. The main task will be transporting the mined rock which is stored there. To avoid transport by oxcart to Giakova, the mine is to be connected by a light railway with the upper terminal of the Deva cable railway. A hoist may also be installed.

Production at this mine in 1943 is expected to be 170 tons of Grade I ore and 340 tons of Grade II ore.

3. Prospecting Activities in Kosove Region

Prospecting activities have been carried out in the regions of Gorice, Pustoselo and Petrovic, near Orahovac, and in the regions of Fonosec and Popovac.

None of them has shown any results which would permit setting up a production program for 1943. It would therefore probably be best to stop the prospecting operations in the zones where no results were obtained. In those zones where there is still a possibility of an ore strike they are to be continued. Transport facilities for the ore already on hand and the ore which may be mined are to be investigated as railroad construction progresses.

It is estimated that the material, weighing 279 tons, which has already been mined will yield about 80 tons of Grade I ore and 100 tons of Grade II ore.

Should the results of the prospecting continue to be unsatisfactory, the workers employed there will be transferred to Labucevo, near Orahovac, and to Ceret, near Popovac, where prospecting activities are also going on. The ore content would have to be the same as in the other regions to make operations feasible, i.e., at least 41 percent for Grade I and 20 to 35 percent for Grade II.

The prospecting activities have yielded 1,045 tons of ore, as follows: Orahovac, 267 tons of Grade I and 303 tons of Grade II; Popovac, 222 tons of Grade I and 183 tons of Grade II.

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